

Claims

1. An immunogenic hybrid polypeptide, in which a C-terminus of a peptide comprising an amino acid sequence selected from SEQ ID Nos. 1, 2 and 3 is fused to an N-terminus of a helper T cell epitope.

2. The polypeptide according to claim 1, wherein the peptide is prepared by linking two to eight copies of the amino acid sequence selected from SEQ ID Nos. 1, 2 and 3.

3. The polypeptide according to claim 2, wherein the peptide is prepared by linking four copies of the amino acid sequence selected from SEQ ID Nos. 1, 2 and 3.

4. The polypeptide according to claim 3, wherein the peptide is prepared by linking four copies of the amino acid sequence of SEQ ID No. 1.

5. The polypeptide according to claim 4, wherein the peptide is a polypeptide having an amino acid sequence of SEQ ID No. 5.

6. The polypeptide according to claim 1, wherein the helper T cell epitope is selected from the group consisting of hepatitis B surface antigen helper T cell epitopes,

Chlamydia trachomatis major outer membrane protein helper T cell epitopes, *Plasmodium falciparum* circumsporozoite helper T cell epitopes, *Escherichia coli* TraT helper T cell epitopes, Tetanus toxoid helper T cell epitopes, diphtheria
5 toxoid helper T cell epitopes, *Schistosoma mansoni* triose phosphate isomerase helper T cell epitopes, measles virus F protein helper T cell epitopes, and rabies virus helper T cell epitopes.

7. The polypeptide according to claim 6, wherein the
10 T cell epitope is a helper T cell epitope of the hepatitis B surface antigen.

8. The polypeptide according to claim 7, wherein the T cell epitope is a preS2 helper T cell epitope of the hepatitis B surface antigen.

15 9. The polypeptide according to claim 8, wherein the T cell epitope has an amino acid sequence of SEQ ID No. 7.

10. The polypeptide according to claim 1, which has an amino acid sequence of SEQ ID No. 9.

20 11. A vaccine for preventing or treating obesity, comprising the polypeptide of any one of claims 1 to 10.

12. A recombinant vector comprising a gene encoding the polypeptide of any one of claims 1 to 10.

13. The recombinant vector according to claim 12, which is pB1₄T (KCCM-10562).

5 14. A host cell transformed with the recombinant vector of claim 12.

15. A method of preparing the polypeptide of claim 1 by culturing the host transformed with the recombinant vector cell of claim 12.